R1.126 38

25. A transflective liquid crystal display comprising:

a liquid crystal disposed between a front substrate and a rear substrate,

a front polariser located in front of the front substrate and rear polariser located behind the rear substrate,

a front retarder located between the front substrate and the front polariser, and

a rear retarder located between the rear substrate and the rear polariser, and addressing means for addressing each pixel and switching each pixel between different states resulting in different levels of transmission of light through the display, characterised in that,

a light source is located behind the rear polariser, and

the liquid crystal display is provided with a rear electrode which is partially reflective and partially transmissive and the liquid crystal is divided into a plurality of pixels.

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26. A transflective display as claimed in claim 25, wherein

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the front retarder is an achromatic combination retarder.

40 27. A transflective display as claimed in claim 25, wherein the front retarder comprises a front halfwave plate and a ftont quarterwave plate.

41 28. A transflective display as claimed in claim 27, wherein the front quarterwave plate has a slow axis substantially parallel or normal to a bisetrix of surface alignment directions of the liquid crystal, such that a retardation of the front quarterwave plate, in conjunction with the retardation of the liquid crystal, produces in one state circular polarised light after a single pass.

42 29. A transflective display as claimed in claim 27, wherein the front quarterwave plate has a slow axis substantially parallel or normal to a bisetrix of surface alignment directions of the liquid crystal, such that a retardation of the front quarterwave plate, in conjunction with the retardation of the liquid crystal, produces in a second state linear polarised light after a single pass.

43 30. A transflective display as claimed in claim 27, wherein

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the front quarterwave plate has a retardation of between 50nm and 250 nm.

44 31. A transflective display as claimed in claim 25, wherein the rear retarder comprises a rear quarterwave plate.

45 32. A transflective display as claimed in claim 31, wherein the rear quarterwave plate has a slow axis substantially parallel or normal to a bisetrix of surface alignment directions of the liquid crystal, such that a retardation of the rear quarterwave plate, in conjunction with the retardation of the liquid crystal and the front quarterwave plate, produces in one state circular polarised light after a single pass.

SN 46 33. A transflective display as claimed in claim 27, wherein the rear retarder comprises a rear quarterwave plate, and the rear quarterwave plate has a slow axis substantially parallel or normal to a bisetrix of surface alignment directions of the liquid crystal, such that a retardation of the rear quarterwave plate, in conjunction with the retardation of the liquid crystal and the front quarterwave plate, produces in a second state linear polarised light

after a single pass.

A.1.126 47 34. A transflective display as claimed in claim 31, wherein the rear quarterwave plate has a retardation of between 100nm and 180nm.

48 35. A transflective display as claimed in claim 25, wherein the rear substrate is provided with a partially reflective and partially transmissive mirror.

49 36. A transflective display as claimed in claim 25, wherein the rear retarder further comprises a rear halfwave plate.

50 37. A transflective display as claimed in claim 30, wherein the rear retarder further comprises a rear halfwave plate and the rear halfwave plate is located between the rear quarterwave plate and the rear polariser.

51 38. A transflective display comprising a liquid crystal divided into a plurality of pixels, addressing means for addressing each pixel and swithing each pixel between different states resulting in different levels of transmission of light through the display, a flashing

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backlight located behind the liquid crystal, and a partially reflective mirror located between the liquid crystal and the backlight for both reflecting ambient light back through the liquid crystal and allowing transmission of light from the backlight through the liquid crystal, characterised in that each pixel is provided with a light filter, and the backlight comprises a plurality of sequentially flashing light sources.

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~~39~~. A transflective display as claimed in claim 38, wherein each light filter is a colour light filter, and wherein said sequentially flashing light sources are of different colours.

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~~40~~. A transflective display as claimed in claim 39, wherein said liquid crystal is part of an active matrix display.

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~~41~~. A transflective display as claimed in claim 38, wherein the liquid crystal forms a Pi or OCB cell.

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~~42~~. A transflective display as claimed in claim 38, wherein each said sequentially flashing light source is

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a light emitting diode (LED).

R1.126 56 ~~45~~. A transflective display as claimed in claim 39, wherein each colour filter provides a varying level of absorption across its area.

57 ~~44~~. A transflective display as claimed in claim 43, wherein each colour filter has a transparent region.

58 ~~45~~. A transflective display as claimed in claim 44, wherein said liquid crystal is provided with a plurality of partially reflective electrodes each having a light transmissive area, and wherein each said transmissive area is optically aligned with a transparent region of one of said colour filters.

59 ~~46~~. A transflective display as claimed in claim 38, wherein the transflective liquid crystal display comprises

a liquid crystal disposed between a front substrate and a rear substrate,

a front polariser located in front of the front substrate and rear polariser located behind the rear substrate,

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a front retarder located between the front substrate and the front polariser, and

a rear retarder located between the rear substrate and the rear polariser, and addressing means for addressing each pixel and switching each pixel between different states resulting in different levels of transmission of light through the display, characterised in that,

a light source is located behind the rear polariser, and

the liquid crystal display is provided with a rear electrode which is partially reflective and partially transmissive and the liquid crystal is divided into a plurality of pixels.

RM2b 60 ~~47~~. A transflective display as claimed in claim 35, wherein said partially reflective and partially transmissive mirror comprises a plurality of gaps or holes.

61 ~~48~~. A transflective display as claimed in claim 38, wherein said partially reflective and partially transmissive mirror comprises a plurality of gaps or holes.

62 ~~49~~. A transflective display as claimed in claim 35,

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wherein said partially reflective and partially transmissive mirror is a mirror transparent to a predetermined value between 10 and 90%.

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50. A transflective display as claimed in claim 38, wherein said partially reflective and partially transmissive mirror is a mirror transparent to a predetermined value between 10 and 90%.

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51. A transflective display as claimed in claim 39, wherein for transmission, transflective and reflection modes of the transflective display a voltage level for each said different colour is individually adjusted.

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52. A transflective display as claimed in claim 25, wherein said front and rear polarisers are parallel polarisers.

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53. A transflective display as claimed in claim 38, wherein said front and rear polarisers are parallel polarisers.

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54. A transflective display as claimed in claim 25, wherein said front and rear polarisers are crossed polarisers.

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68/55. A transflective display as claimed in claim 38, wherein said front and rear polarisers are crossed polarisers.

69/56. A transflective display as claimed in claim 25, in which the effective retardation of the nematic LC is continuously switchable, and, the two front retarders function together as an achromatic combination retarder.

70/57. A transflective display as claimed in claim 38, in which the effective retardation of the nematic LC is continuously switchable, and, the two front retarders function together as an achromatic combination retarder.

71/58. A transflective display as claimed in claim 25, in which the effective retardation of the nematic LC is continuously switchable, and, the two rear retarders function together as an achromatic combination retarder.

72/59. A transflective display as claimed in claim 38, in which the effective retardation of the nematic LC is continuously switchable, and, the two rear retarders function together as an achromatic combination retarder.

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R1.126 73. A transflective display as claimed in claim 25, in which the front quarter wave plate has its slow axis substantially normal or parallel to the bisectrix of the surface director orientations of the nematic LC, and the two front retarders form an achromatic combination retarder, and the combination retarder is modified to compensate for the residual retardation of the LC at finite voltages.

74. A transflective display as claimed in claim 38, in which the front quarter wave plate has its slow axis substantially normal or parallel to the bisectrix of the surface director orientations of the nematic LC, and the two front retarders form an achromatic combination retarder, and the combination retarder is modified to compensate for the residual retardation of the LC at finite voltages.

75. A transflective display as claimed in claim 25 in which the rear quarter wave plate has its slow axis substantially normal or parallel to the bisectrix of the surface director orientations of the nematic LC, and the two rear retarders form an achromatic combination retarder, and the combination retarder is modified to compensate for the

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residual retardation of the LC at finite voltages.

Pl.126 76 ~~63~~. A transflective display as claimed in claim 38, in which the rear quarter wave plate has its slow axis substantially normal or parallel to the bisectrix of the surface director orientations of the nematic LC, and the two rear retarders form an achromatic combination retarder, and the combination retarder is modified to compensate for the residual retardation of the LC at finite voltages.

77 ~~64~~. A transflective display as claimed in claim 25, which the nematic LC has antiparallel surface director orientation with surface pretilt, and the front substrate functions as a colour filter plate.

78 ~~65~~. A transflective display as claimed in claim 38, which the nematic LC has antiparallel surface director orientation with surface pretilt, and the front substrate functions as a colour filter plate.

79 ~~66~~. A transflective display as claimed in claim 25, which the red, green and blue voltage levels are individually adjusted for transmission, transflective or reflection

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modes, and the transmission/reflection against voltage curve is wavelength dependent and is different between the reflective and the transmissive mode.

R1.126 80 ~~67~~. A transflective display as claimed in claim 38, which the red, green and blue voltage levels are individually adjusted for transmission, transflective or reflection modes, and the transmission/reflection against voltage curve is wavelength dependent and is different between the reflective and the transmissive mode.

81 ~~68~~. A transflective display as claimed in claim 38, in which the nematic LC has substantially parallel surface director orientations.

82 ~~69~~. A transflective display as claimed in claim 68, in which the nematic LC is formed from a Pi cell.